

THE CROWFOOT FAMILY IN OHIO.

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Ranunculaceæ, Crowfoot Family.

Perennial or annual herbs, or woody climbers, with acrid sap. Leaves usually alternate, sometimes opposite; simple or compound, with clasping or dilated base; stipules none. Flowers hypogynous, actinomorphic or sometimes zygomorphic, bisporangiate or occasionally monosporangiate; perianth of similar segments or differentiated into calyx and corolla; capels usually separate; stamens numerous. Fruit an achene, follicle or berry.

SYNOPSIS.

- I. Petals or sepals with a nectariferous pit, spur or tube.
 1. Petals broad with a nectariferous pit; sepals not spurred.
(1) *Ranunculus*; (2) *Ficaria*; (3) *Batrachium*.
 2. Petals cup-shaped or narrow; sepals not spurred.
 - (a) Pods sessile; leaves not trifoliate.
(4) *Trollius*; (5) *Helleborus*; (6) *Nigella*.
 - (b) Pods long stalked; leaves trifoliate.
(7) *Coptis*.
 3. Either petals or sepals spurred, or hooded; actinomorphic or zygomorphic.
(8) *Aquilegia*; (9) *Aconitum*; (10) *Delphinium*.
- II. Sepals and petals without a nectar pit or spur; sepals usually petal-like.
 1. Styles usually elongated, often very prominent in fruit; fruit an achene.
 - (a) Sepals imbricated in the bud.
(11) *Anemone*; (12) *Hepatica*.
 - (b) Sepals valvate in the bud; leaves opposite.
(13) *Clematis*; (14) *Viorna*.
 2. Style short in fruit; fruit a many-seeded follicle, or a berry.
 - (a) Flowers usually solitary, not racemose.
(15) *Caltha*; (16) *Hydrastis*.
 - (b) Flowers racemose.
(17) *Actaea*; (18) *Cimicifuga*.
 3. Style short in fruit; fruit an achene or a few-seeded follicle; leaves ternately compound or decompound.
(19) *Syndesmon*; (20) *Isopyrum*; (21) *Thalictrum*.

KEY TO THE GENERA.

1. Petals or sepals or both with a nectariferous cup, or spur; flowers frequently yellow. 2.
1. Petals and sepals, when present, without a nectariferous cup, pit, or spur; flowers not yellow, except *Caltha*. 11.
2. Flowers actinomorphic. 4.
2. Flowers zygomorphic. 3.
3. Posterior sepal hooded, not spurred. *Aconitum*.
3. Posterior sepal spurred. *Delphinium*.

4. Petals flat, with a small pit or cup; carpels usually numerous. 5.
4. Petals narrow, cup-shaped, or tubular at base; carpels usually fewer than 8. 7.
5. Petals yellow; leaves usually not finely dissected. 6.
5. Petals white; leaves usually very finely dissected. *Batrachium*.
6. Sepals 5; flowers not scapose. *Ranunculus*.
6. Sepals 3; flowers scapose. *Ficaria*.
7. Carpels united; flowers with an involucre of dissected leaves. *Nigella*.
7. Carpels separate. 8.
8. Petals long spurred; leaves ternately decompound. *Aquilegia*.
8. Petals small, cupshaped, not projected backward into a spur. 9.
9. Flower stem leafy; leaves lobed or divided irregularly. 10.
9. Flowers on slender leafless scapes; leaves compound with three leaflets. *Coptis*.
10. Petals narrow, linear, with a nectariferous pit at the base; carpels 9 or more. *Trollius*.
10. Petals small, green, tubular cups; carpels usually fewer than 8. *Helleborus*.
11. Leaves alternate or whorled. 12.
11. Leaves large, opposite, compound, twining; our species slightly woody climbers. 20.
12. Flowers yellow; leaves simple, entire, reniform or cordate. *Caltha*.
12. Flowers not yellow; leaves compound, lobed, or dissected. 13.
13. Flowers solitary, umbelliferous or paniculated. 14.
13. Flowers in large branched or simple racemes. 19.
14. Scapose flowers with three sepal-like bracts immediately below the flower. *Hepatica*.
14. Not with sepal-like bracts immediately below the flower. 15.
15. Flowering stem with two alternate, palmately lobed leaves; flowers solitary; perianth deciduous. *Hydrastis*.
15. Flowering stem with an involucre or with more than two alternate leaves. 16.
16. Flowers solitary or few in an umbel. 17.
16. Flowers in large, terminal panicles; often diecious. *Thalictrum*.
17. Flowers umbellate or solitary subtended by a definite involucre. 18.
17. Flowers not involucreate; ovules several. *Isopyrum*.
18. Carpels very numerous; each flower usually solitary on a large peduncle, subtended by an involucre. *Anemone*.
18. Carpels 4-15; flowers usually umbellate. *Syndesmon*.
19. With one carpel, petals spatulate or narrow. *Actaea*.
19. With 1-8 carpels, petals 2-lobed or none. *Cimicifuga*.
20. Flowers panicled; sepals and stamens recurved or spreading. *Clematis*.
20. Flowers usually solitary; sepals and stamens erect. *Viorna*.

Ranúnculus (Tourn.) L. Crowfoot, Buttercup.

Perennial or annual herbs with simple, or usually compound or divided alternate leaves. Flowers solitary, or few in a cluster; yellow or rarely white; usually with five petals and sepals; stamens and carpels numerous, distinct, spirally arranged. Achenes tipped with a minute or elongated style.

1. Leaves entire, terrestrial or swamp plants, stems rooting at the nodes. *R. obtusiusculus*.
1. Leaves finely dissected, aquatic plants, achenes callous margined. *R. delphinifolius*.
1. Some or all of the leaves divided or lobed, terrestrial plants or in wet places. 2.
2. Some or all basal leaves merely crenate or entire. 3.
2. Leaves all lobed or divided. 5.
3. Basal leaves cordate or orbicular, crenate, occasionally some may be 3-lobed, flowers inconspicuous, achenes smooth. 4.
3. Basal leaves 3-lobed, divisions linear, the lowest may be entire, flowers conspicuous. *R. arvensis*.
4. Basal leaves cordate, stems glabrous. *R. abortivus*.
4. Basal leaves more or less orbicular, not cordate; stems villous below. *R. micranthus*.
5. Flowers inconspicuous, less than 3-8 inch broad. 6.
5. Flowers conspicuous, $\frac{1}{2}$ -1 inch broad. 8.
6. Stems glabrous, achenes merely apiculate. *R. sceleratus*.
6. Stems densely hirsute, achenes with short or recurved beak. 7.
7. Divisions of leaves wedge-shaped or lanceolate, deeply incised, fruit oblong or cylindrical. *R. pennsylvanicus*.
7. Divisions ovate, lobed, fruit globose. *R. recurvatus*.
8. Carpels with a short style or beak. 9.
8. Carpels with a long prominent style or beak. 11.
9. Stems erect; divisions of the leaves deeply and abundantly cleft. 10.
9. Stems recumbent or creeping by stolons; divisions of the leaves only moderately cleft, the lobes rather broad. *R. repens*.
10. Stem with a thick bulbous base; leaves appearing pinnate, ultimate divisions narrow; calyx reflexed. *R. bulbosus*.
10. Stem without bulbous base; leaves palmately divided, the ultimate segments linear; calyx spreading, not reflexed; inflorescence much branched. *R. acris*.
11. Stem leaves sessile, lowest basal leaves may be entire. *R. arvensis*.
11. Leaves all petioled and divided. 12.
12. Leaf segments broad, bases cuneate. 13.
12. Leaf segments narrow, appearing pinnate; roots thickened or fascicled. *R. fascicularis*.
13. Stems glabrous or pubescent; achenes with a long stout style. *R. septentrionalis*.
13. Stems usually densely villous or hispid; achenes abruptly tipped by a subulate style. *R. hispidus*.

1. **Ranunculus abortivus** L. Kidney-leaf Crowfoot. Pale green, succulent, branching herbs, $\frac{1}{2}$ -1 $\frac{1}{2}$ ft. high, glabrous or slightly pubescent. Basal leaves cordate or reniform, crenate, occasionally 3-lobed, long petioled; stem leaves 3 to 5 parted, segments linear or cuneate, sessile. Flowers inconspicuous, pale yellow, petals shorter than the reflexed sepals. Achenes, tipped by a short beak, forming a globose head. In shady places. General and abundant.

2. **Ranunculus micranthus** Nutt. Rock Crowfoot. Stems branched, spreading, villous, 6-18 in. high. Basal leaves 3-lobed, crenate, dark green; stem leaves sessile, divided into linear, entire, or sharp-toothed segments. Flowers inconspicuous light yellow. Head of fruit ovate, receptacle linear glabrous. Open deciduous woods, often on rocks. Clermont County.

3. **Ranunculus sceleratus** L. Celery-leaf Crowfoot. A tall, stout stemmed branching herb, $\frac{1}{2}$ - 2 ft. tall. Basal leaves 3-5 lobed, long broad petioles; stem leaves, except upper ones, petioled, parted into linear segments, entire or several toothed. Flowers inconspicuous, pale yellow, petals scarcely exceeding sepals. Head of fruit oblong, achenes apiculate. Swamps and wet ditches. Rather general.

4. **Ranunculus recurvatus** Poir. Hooked Crowfoot. Erect, branching, hirsute herb, $\frac{1}{2}$ -2 ft. tall. Leaves 3-parted, divisions ovate, toothed and lobed, hirsute. Flowers inconspicuous, pale yellow, petals shorter than, or about equal to the reflexed calyx. Head of fruit globose, achenes with a recurved beak. General and abundant.

5. **Ranunculus acris** L. Tall Buttercup. Tall, erect herbs, branching above, pubescent. Basal leaves 5-7 parted, the divisions sessile, cleft into linear segments, stem leaves small, 3-parted, sessile. Flowers in a spreading cyme, bright yellow, waxy; petals obovate, much longer than the sepals. Head of fruit globose, achenes compressed, beak short. In fields and meadows. From Europe. Rather general, except in southern part of state.

6. **Ranunculus bulbosus** L. Bulbous Buttercup. Erect, branching, pubescent stems, from a thickened bulbous base. Basal leaves 3-parted, lateral divisions sessile, terminal one stalked giving the leaf a pinnate appearance; divisions cleft, ultimate segments narrow. Flowers conspicuous, bright, glossy

yellow, sepals reflexed. Head of fruit globose; achenes compressed beaks very short. Fields and roadsides. From Europe. Columbiana County.

7. **Ranunculus pennsylvanicus** L. f. Bristly Crowfoot. A branching leafy herb with erect densely hirsute stems, 1-2 ft. tall. Leaves all divided, segments stalked, cuneate or lanceolate, sharply notched, hispid. Flowers inconspicuous. Head of fruit short, cylindrical, achenes smooth. Wet open places. Cuyahoga, Perry, Lucas, Fairfield, Licking, Ottawa, Lake, Wayne.

8. **Ranunculus repens** L. Creeping Buttercup. A low herb, creeping by runners and forming large patches. Stems pubescent. Leaves all petioled, 3-divided, divisions wedge-shaped, cleft and lobed, usually stalked, often blotched. Flowers conspicuous bright yellow. Head of fruit globose, achenes margined and tipped by a short stout beak. Wet ground in fields, or in roadsides. From Europe. Columbiana, Scioto.

9. **Ranunculus septentrionalis** Poir. Swamp Buttercup. Erect or ascending herbs, 1-3 ft. tall; later stems decumbent and may root at the nodes; almost or quite glabrous, rather stout. Leaves 3-divided, divisions stalked, 3-cleft, and cut, cuneate. Flowers conspicuous, 1 in. broad, bright yellow; petals obovate, much longer than the sepals. Head of fruit globose or oval, achenes flat, tipped by sword-shaped style. Low moist or swampy ground. General.

10. **Ranunculus hispidus**. Mx. Hispid Buttercup. Similar to *R. septentrionalis*, but densely villous when young, less hispid when old. Does not send out runners. Dry woods and thickets. General.

11. **Ranunculus fasciculâris** Muhl. Tufted Buttercup. Ascending or spreading, low plant growing in a tuft from a cluster of fleshy roots. Stems pubescent. Lateral leaf-sections sessile, terminal one stalked, giving the leaf a pinnate appearance; ultimate divisions linear or slightly oblong. Flowers conspicuous, bright yellow. Head of fruit globose, achenes flat, margined and tipped with a long style. Woods and hillsides. Ottawa, Lucas, Cuyahoga.

12. **Ranunculus arvensis** L. Corn Crowfoot. Erect, branching herbs, 6 in. to 1 ft. tall. Stems glabrous or slightly pubescent. Basal leaves broad petioled, 3-cleft, divided into linear segments, lowest ones may be entire; stem leaves similar,

sessile. Flowers pale yellow, petals longer than the sepals. Achenes spiny-tuberculate on both sides and margins. Waste places. From Europe. No specimens.

13. **Ranunculus obtusifolius** Raf. Lance-leaf Buttercup. Stems ascending, 1-3 ft. long, often rooting at the nodes. Leaves lanceolate, entire or denticulate, petioles clasping. Flowers paniced, bright yellow, $\frac{1}{2}$ - $\frac{3}{4}$ in. broad. Fruit compressed achenes, forming a globose head. Wet ditches and swamps. Licking, Cuyahoga, Lorain, Lake, Franklin, Erie, Jackson.

14. **Ranunculus delphinifolius** Torr. Yellow Water Crow-foot. Aquatic or partly immersed herbs with long branching stems rooting at the nodes. Immersed leaves finely dissected; emerged leaves 3-5 divided. Flowers yellow, $\frac{3}{4}$ - $1\frac{1}{2}$ in. broad. Head of fruit globose, achenes callous margined and tipped by a straight beak. Ashtabula, Darke, Auglaize, Lucas, Wood, Wyandot, Huron, Williams, Marion.

Ficària (Rupp.) Huds. Golden-cup.

Succulent, perennial herbs with fleshy tuberous roots. Stem leaves alternate, simple, entire or crenate. Flowers yellow and solitary; sepals 3-5, deciduous; petals 7-12; stamens and carpels numerous. Achenes in a head; cotyledon only one.

1. **Ficaria ficària** (L.) Karst. Golden-cup. A low herb, 3-5 in. high, found in moist places. Leaves cordate, $1-2\frac{1}{2}$ in. broad, obtuse crenate, with broad petiole. Flowering stem scapose with broad petiole. Flowering stem scapose with one or two leaves. Flowers $1-1\frac{1}{2}$ in. in diameter. From Europe. Lake County.

Batrachium S. F. Gr. Water-crowfoot.

Aquatic, perennial herbs; usually with dissected leaves; the immersed ones very finely dissected. Flowers solitary on peduncles borne opposite the leaves; white or the claw of the petals yellow; sepals and petals usually 5; stamens many; carpels several. Achenes transversely wrinkled.

1. Leaves petioled, flaccid when taken from the water. *B. trichophyllum*.
1. Leaves sessile or nearly so, rigid when taken from the water.

B. circenetum.

1. **Batrachium trichophyllum** (Chaix) Schlutz. White Water-crowfoot. Leaves all under water and dissected, larger than 1 in. broad. Rather general.

2. **Batrachium circinatum** (Sibth) Rchb. Circinate Water-crowfoot. Leaves all under water; 1 in. broad or smaller, standing at right angles to the stem. Auglaize, Licking.

Tróllius L.

Erect perennial herbs with glabrous palmately parted leaves and a solitary terminal flower. Sepals yellow, whitish or purplish, petaloid, 5-7 in number; petals 15-25, very small, linear, with a nectar pit at base; stamens and carpels numerous. Follicles forming a head. Marshy places.

1. **Trollius láxus** Salisb. American Globe-flower. Stems slender, $\frac{1}{2}$ -2 ft. high. Leaves usually 5-parted, 1- $\frac{1}{2}$ in. broad, upper leaf sessile. Flowers greenish-yellow; sepals obovate, spreading. Stark and Columbiana.

Helléborus (Tourn.) L. Hellebore.

Erect perennial herbs. Leaves palmately-parted, basal ones large, petioled; stem ones sessile. Flowers solitary, white, greenish or yellowish; sepals 5, obovate, clawed; petals 8-10, tubular, shorter than the stamens; stamens numerous; carpels fewer than 8. Capsules.

1. **Helleborus víridis** L. Green Hellebore. Stems stout, 8-24 in. high. Leaves alternate, usually 3-5 parted, those at base of branch may be bract-like. Sepals green, petaloid. Waste places. Stark, Miami, Gallia, Franklin.

Nigélla (Tourn.) L.

Slender stalked, erect herbs with very finely dissected leaves. Flowers solitary, terminal and subtended by an involucre which overtops it; sepals 5, petaloid; petals minute, cupshaped; stamens numerous; carpels 5, united. Fruit a capsule. A cultivated plant which sometimes escapes.

1. **Nigella damascèna** L. Love-in-a-mist. Leaves alternate, pinnately dissected, 1-3 in. long. Flowers about 2 in. in diameter, showy, bluish. Seeds black aromatic. From Eurasia. Hamilton, Erie.

Cóptis Salisb.

Low erect herbs, 4-6 in. high, from a slender, yellow, root-stock. Leaves basal, glabrous, evergreen, shining, 3 leaflets; sepals 5-7, petaloid, deciduous; petals 5-7, minute, clubshaped,

cucullate; stamens numerous; carpels 3-7, stipitate, forming follicles in fruit. In damp mossy woods.

1. **Coptis trifolia** (L.) Salisb. Gold-thread. Leaf-blades reniform, 1-2 in. broad, 3 leaflets, ovate, prominently veined, rich green, paler beneath. Follicles on stipes, spreading. Summit, Stark, Portage, Geauga, Defiance.

Aquilègia (Tourn.) L. Columbine.

Erect, perennial herbs, with ternately decomposed leaves and conspicuous nodding flowers. Sepals 5, petaloid; petals 5, spurred, spurs projecting backward between the sepals; stamens numerous; carpels 5, separate, forming spreading follicles in fruit. Rocky woods and thickets.

1. Spurs straight, knobbed at tip. *A. canadense*.

1. Spurs curved inward. *A. vulgaris*.

1. **Aquilègia canadense** L. Wild Columbine. Stem branched, 1-1½ ft. high, glabrous or very slightly pubescent. Basal leaves slender-petioled, leaflets palmately lobed or parted; upper stem leaves nearly sessile. Flowers solitary, terminating the branches, longer than broad, red with yellow lips, spurs straight, stamens and carpels exserted. Fruit erect, follicles tipped with filamentous style. General.

2. **Aquilegia vulgaris** L. European Columbine. Stem stout, erect, pubescent or nearly glabrous, slightly branched. Flower as broad as long; blue, purple, pink or white; stamens and carpels hardly exserted. From Europe; escaped from gardens. Fulton County.

Aconitum (Tourn.) L. Monkshood.

Erect or trailing, slender, perennial herbs. Leaves alternate, palmately-cleft; lower ones slender petioled, the upper nearly sessile, 3-5 cleft, subtending flower peduncles. Flowers ½-2 in. broad, conspicuous; the upper two concealed in the hooded sepal, very small, the others when present are minute; stamens numerous; carpels 3-5 distinct, sessile forming follicles in fruit.

1. **Aconitum noveboracense** Gray. New York Monkshood. Erect plants, 1½-2 ft. high. Leaves glabrous, thin, 2-4 in. long, deeply cleft, Panicles few-flowered; flowers blue, whitish below, hood with a prominent descending beak. Summit and Portage.

Delphinium L. Larkspur.

Erect annual or perennial herbs. Leaves alternate, cut and divided. Flowers in showy terminal racemes; sepals 5, petaloid, upper one spurred; petals 2-4, the upper ones prolonged backward into the spur, the lateral ones small or wanting; stamens numerous; carpels 1 or 3. Follicles. Open woods, meadows or roadsides.

1. Carpels 1. *D. ajacis*.

1. Carpels 3. 2.

2. Leaves 3-5 cleft; division wedge-shaped, 3 cleft at apex; roots elongated and woody; 2-6 ft. tall. *D. exaltatum*.

2. Leaves 5-7 cleft; division linear; roots short and tuberous; 1-3 ft. tall. *D. tricornne*.

1. **Delphinium tricornne** Mx. Dwarf Larkspur. Stem rather stout, finely pubescent. Flowers deep blue in usually few-flowered racemes; petals bearded. Pods divergent. General.

2. **Delphinium exaltatum** Ait. Tall Larkspur. Stems slender. Leaves large. Racemes dense, elongated; flowers blue or purplish; petals bearded. Pods erect. Franklin, Stark.

3. **Delphinium ajacis** L. Garden Larkspur. Erect, much branched annuals. Leaves finely dissected into narrow linear divisions; lower ones petioled, upper ones nearly or quite sessile. Flowers blue or rarely white, numerous on spicate racemes, spur long and slender. Belmont, Ashtabula, Adams, Knox, Montgomery, Lake, Madison, Hamilton, Franklin, Wayne, Muskingum, Monroe, Preble.

Anemone L. Anemone.

Erect perennial herbs, with palmately compound or parted leaves. Basal leaves long-petioled, stem leaves forming an involucre below the peduncled flower or flowers. Sepals petaloid; petals none; stamens and carpels numerous. Achenes.

1. Leaves of involucre sessile; stems usually 2-several flowered. *A. canadensis*

1. Leaves of involucre petioled. 2.

2. Small, 4-12 in. high, stems slender, almost glabrous. *A. quinquefolia*.

2. Tall, 2-3 ft. high, stems pubescent. 3.

3. Leaf divisions narrow, wedge-shaped. *A. cylindrica*.

3. Leaf divisions broad, ovate. *A. virginiana*.

1. **Anemone cylindrica** Gr. Long-fruited Anemone. Tall plants, 1-3 ft. high, softly pubescent, purplish, branching at the involucre. Leaves 2-4 in. broad, 3-5 parted, the divisions narrow, notched and toothed; basal leaves tufted. Flowers greenish-white, 1-1½ in. broad. A head of woolly achenes each tipped by a short style. Open places. Wyandot, Erie, Ottawa, Wood.

2. **Anemone virginiana** L. Virginia Anemone. Herbs, 1-3 ft. tall, pubescent, branching at the involucre. Basal leaves long petioled, 4-8 in. broad, broader than long, lobed and notched; stem leaves petioled. Flowers solitary, greenish-white, 1-1½ in. broad. A head of downy achenes tipped by divergent styles. River banks and open woods. General.

3. **Anemone canadensis** L. Canada Anemone. Erect herbs with rather stout somewhat pubescent stems, branching at the involucre, 1-1½ ft. tall. Basal leaves long petioled, 3-5 parted, cleft and toothed; stem leaves sessile, 4-8 in. broad. Flowers white, 1-1½ in. broad, sepals obovate, obtuse. A globose head of flat achenes each tipped by the persistent style. General.

4. **Anemone quinquefolia** L. Wind-flower. Erect herb; 4-12 in. tall, with slender frail-looking, nearly glabrous simple stems, from a slender rootstock. Leaves 5-parted, slender petioled, 2-3 in. broad; basal leaves appear later than the flowering stem. A globose head of oblong achenes. Open woods and thickets. General, except southern and southwestern parts of state.

Hepática (Rupp.) Mill. Liver-leaf.

Perennial herbs, with 3-lobed evergreen basal leaves and solitary white, pink or purplish flowers on hairy scapes. An involucre of 3 small sessile leaves substends the flower. Sepals petal-like, petals wanting, stamens numerous. Fruit, short-beaked, pubescent achenes.

1. Lobes of leaves obtuse or rounded. *H. hepatica*.

2. Lobes of leaves acute or pointed. *H. acutiloba*.

1. **Hepatica hepática** (L.) Karst. Roundlobed Liver-leaf. Scapes 3-8 in. Leaves reniform, 2-3 in. broad, with slender hairy petioles. Flowers ½-¾ in. broad; sepals oval or oblong, longer than the stamens. Several achenes forming a head. General.

2. **Hepatica acutiloba** DC. Sharplobed Liver-leaf. Differs from the preceding species only in having the stem leaves and the lobes of the basal leaves acute or pointed. General.

Clématis L. Clematis.

Woody vines, climbing by means of petioles twisted about the support. Leaves opposite, compound; 3 ovate, stalked leaflets; or simple, 3-lobed. Flowers in loose many-flowered, cymose, panicles, nearly diecious; sepals 4-5 spreading, petaloid; petals none; stamens numerous, spreading; carpels numerous, long-styled. Achenes with long plume-like, persistent style.

1. **Clematis virginiana** L. Virginia Virgin's-bower. A long vine, found on fences and bushes. Leaves glabrous. Flowers white. General.

Viórna Reichb. Leather-flower.

Woody vines or erect herbs, with opposite simple or compound leaves with the petiole prolonged into a tendril. Flowers solitary, bell-shaped; stamens and carpels numerous; styles plumose. Achenes with long persistent style.

1. **Viorna viórna** (L.) Small. Leather-flower. A vine growing to the height of 10 ft. or more. Leaves mostly compound, with petiole prolonged and tendril-like; leaflets ovate, entire, often trifoliate. Calyx purple, with very thick sepals; petals none. Anthers long and slender. Southern half of State; also in Auglaize County.

Cáltha (Rupp.) L. Marsh-marigold.

Succulent perennials with alternate reniform, crenate or entire leaves and conspicuous solitary yellow, white or pink flowers. Sepals 5-9, petaloid, stamens and carpels numerous. Follicles.

1. **Caltha palústris** L. Marsh-marigold. Stems hollow, erect, 6-15 in. tall. Leaves crenate, 3 in. broad or less. Flowers bright yellow, waxy, $\frac{1}{2}$ -1 in. broad. In swamps. General.

Hydrástis Ellis. Golden-seal.

Erect perennial herbs with a thick, knotted, yellow root-stock. Stem pubescent with 2 alternate palmately lobed leaves near the summit. Flowers small, solitary, greenish-white; sepals deciduous; petals none; stamens and carpels numerous. Fruit a crimson aggregate berry.

1. **Hydrastis canadensis** L. Golden-seal. About 6 in. tall. Lower leaf long-petioled, 5-9 lobed; upper leaf subtending the flower. Filaments flattened. Fruit ovoid. Rich woods. General.

Actæa L. Baneberry.

Erect perennial herbs, with ternately compound leaves and terminal racemes of white flowers. Sepals 4 or 5, petaloid, deciduous; petals very small, flat, clawed, narrow; stamens numerous with slender filaments; carpels united, forming a single ovulary; stigma sessile, 2-lobed. Fruit a berry.

1. Pedicels slender, fruit red. *A. rubra*.

1. Pedicels stout, fruit white. *A. alba*.

1. **Actæa rubra** (L.) Wild. Red Baneberry. Tall herbs, 1-3 ft. high. Lower leaves long petioled, decompose, divisions ovate, incised. Pedicels slender. Open woods. Sandusky, Erie.

2. **Actæa alba** (L.) Mill. White Baneberry. Leaflets more deeply incised than preceding species; lowest ultimate leaflet may be compounded. Pedicels as thick as peduncles. Open woods. General.

Cimicifuga L. Bugbane.

Tall, erect perennial herbs, with large ternately decompose leaves and white flowers in terminal compound racemes. Sepals 4 or 5, petaloid, deciduous; petals 1-8, minute, clawed, 2-lobed; stamens numerous; carpels 1-8, forming pods. Open woods.

1. **Cimicifuga racemosa** (L.) Nutt. Black Cohosh. Slender, 3-8 ft. tall. Divisions of leaves ovate or oblong, cleft. Racemes densely flowered, conspicuous, 1-2½ ft. long. Stigmas sessile. Pods oval, beaked. Eastern half of state to Erie, Fairfield and Clermont Counties.

Syndesmon Hoffm. Rue-anemone.

Low, glabrous, perennial herb. Basal leaves slender petioled, ternately compound; stem leaves in a whorl subtending an umbel of white or pinkish flowers; sepals numerous. Achenes.

1. **Syndesmon thalictroides** (L.) Hoffm. Rue-anemone. Stems very slender, 4-9 in. high, from a cluster of tuberous roots. Open woods. General and abundant.

Isopyrum L.

Erect glabrous herbs, with slender stems and ternately decomposed leaves. Roots fibrous. Flowers white, solitary, terminal; sepals 5-6 petaloid, deciduous; stamens numerous; carpels 2-20. Follicles forming a head.

1. **Isopyrum biternatum** (Raf.) T. & G. False Rue-anemone. Stems branching. Basal leaves with long slender petioles, thin, ultimate leaflets 3-lobed, broadly ovate. Sepals 5, white, $\frac{1}{2}$ in. long; petals none; carpels about four. Follicles spreading, tipped with a beak. Moist woods and thickets. South-west fourth of state; also in Cuyahoga County.

Thalictrum (Tourn.) L. Meadow-rue.

Tall erect perennial herbs with ternately decomposed leaves. Stem leaves alternate. Flowers small, greenish-white, in loose panicles; sepals deciduous; petals none; stamens numerous; carpels several; may be diecious. Achenes usually beaked.

1. Filaments slender, fibrous. 2.

1. Filaments stout, nearly as broad as the anthers; leaflets sub-orbicular; plant stout and tall. *T. polygamum*.

2. Leaflets sub-orbicular; plant slender, 1-3 ft. tall. *T. dioicum*.

2. Leaflets oblong; plant stout, tall. *T. dasycarpum*.

1. **Thalictrum didicum** L. Early Meadow-rue. Stems slender, glabrous. Leaves slender, petioled, ultimate leaflets orbicular, thin, pale beneath, 5-9 lobed. Flowers diecious green, in spreading panicle of lateral umbels or corymbs; anthers long. Achenes ribbed. Open woods and fence corners. General.

2. **Thalictrum dasycarpum** Fisch. & Lall. Purplish Meadow-rue. Stems stout, purplish, 4-7 ft. tall, leafy branching. Leaves sessile, leaflets oblong or obovate, 3 apical lobes, glabrous, dark green above, lighter and pubescent below. Panicles loose, compound. Achenes with 6 or 8 wings. Open woods and meadows. General.

3. **Thalictrum polygamum** Muhl. Tall Meadow-rue. Stems stout, branching and leafy, 3-11 ft. tall. Stem leaves sessile; leaflets obovate or lanceolate, some with 3 apical lobes. Panicles compound, leafy. Anthers short. Rather general.